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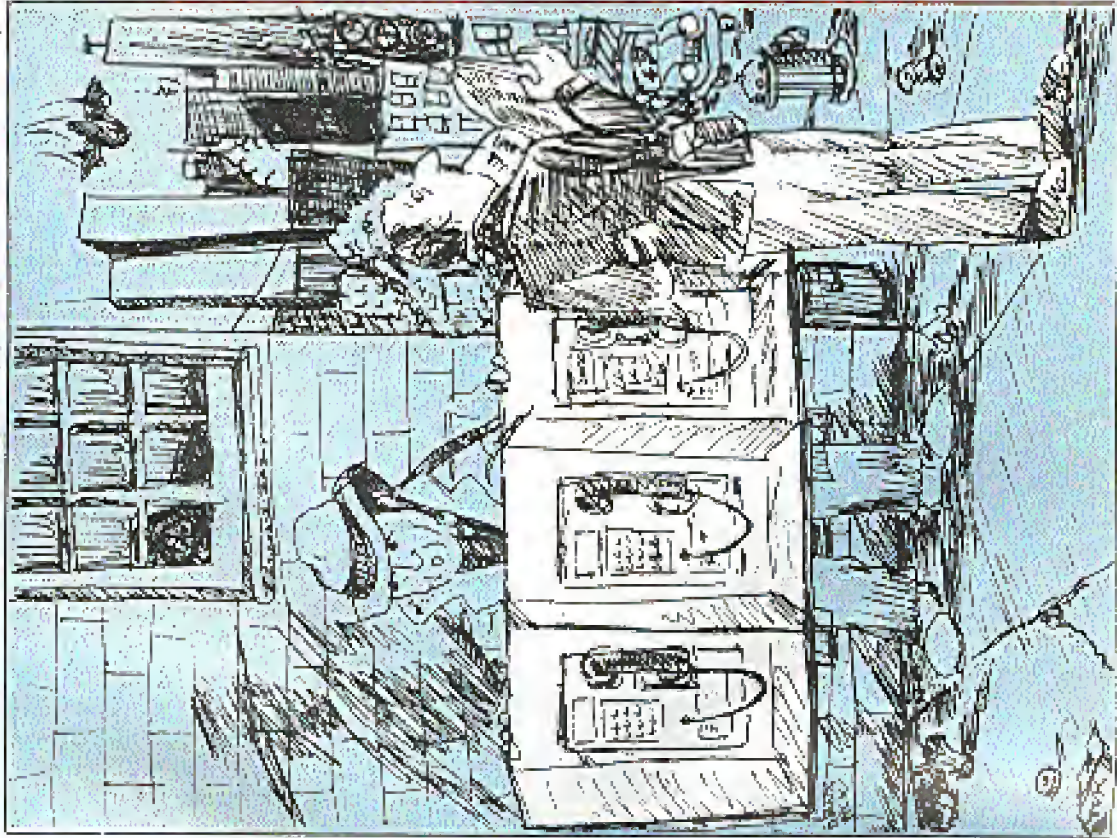
# 2600

The Monthly Journal of the American Hacker

VOL. 4 NO. 5

MAY 1987

\$2





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*It's been kind of a running joke here that if we tell people to let us know if they receive our magazine after a certain date, something will go wrong and nearly everyone will receive it after that date. As a result, we're always inundated with calls. Since we changed our format, this is but one of many problems we've been trying to solve. If all goes well, and it damn well better, we will be mailing on the 18th of May. If you receive this much later than you would a first class letter, let us know and we'll find out who's dragging what.*

*Once the mailing gets close to routine, we'll be focusing on distribution. This is where readers can help us out. As it is, we've been pretty successful at newsletters here in New York, down in the southern part of the country, and in London, UK. Success for us means selling about 80 percent of what we send. We have important things to say here and we want to reach all kinds of other thinking people throughout the world. So, if you know of a fairly decent magazine by you, one that sells alternative publications, let us know and we'll try to distribute there.*

*We hope to see some curious folks at our first public get-together in New York City. It will take place at the Chicago Center at 153 East 53rd Street at 5 pm in the Atrium, where all kinds of people gather. We'll have 2600 buttons and copies of this issue will be everywhere. No stop by and ask some questions or bring articles. And if you'd like us to come to a city near you, start pestering us now.*

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# CLASS: What

By The Veterans

This article will explain the newly developed CLASS system (A&T Bell Labs), and how it may affect us in the near future. Note that the service as it appears for customers is called "CLASS", the C standing for Custom. I assume this is just for looks. At the time during which this article was being initially researched, CLASS was only being developed for the MA ESS switch. At the end of the research involved with this article, CLASS was already implemented in data stage on ESS#F.

## CLASS

The telephone is destined to become a well used and powerful tool for otherwise tedious tasks. Uses notes and other retrieval services will be surveyed through the use of automatic data retrieval employing telephone communications. All in all, there are big plans for the uses one could put the telephone system up to, and CLASS is one plan that is going to drop an innovative bombshell on the telecommunicating world.

At this moment, a local COIS network feature is being developed by Bell Laboratories. This feature will change the way people use phones, and will also change the attitude in which they use them. It will give far more control of the telephone to the user than ever before. This feature is called CLASS (Custom Local Area Signaling Services).

Everyone will find something useful in this newly developed telephone feature. Pizza parlours will no longer have to worry about fraudulent Italian food mongers, and little old ladies won't have to worry about prank calls by certain dubious characters.

What are all these fantastic features? They will include call back of the last caller, regardless of whether you have their telephone number or not. Another will be distinct call waiting tones, and preselected call forwarding (only those people whom you wish to speak to will be forwarded). This is only a rudimentary list of CLASS features to name. It is a very powerful system, and it all relies on LCIS (Local Common Channel Interoffice Signalling), an

intra-LATA version of the ever-popular COIS.

## COIS Background

COIS was originally introduced in 1976 as, basically, the signalling system to one all signalling systems. Instead of using the voice grade tones to carry signalling information, a data network would be used. This network is comprised of data links from each central office (CO) to the appropriate STP (signal transfer point). Signalling information is sent through these links at 4800 bps in the STPs (note that baud rates may increase due to the economic availability of faster data communications hardware), where stored program control issues the signalling information to the needed offices in order to open and complete the call path. SPC checks automatically for on-hook/off-hook status before opening the path, and if the status is off-hook in this case assuming the customer does not have the call waiting custom calling feature), relays information to the originating CO to apply a busy signal to the customer. This is but one of many features; call COIS provides the network with:

Since this text is not centered on the topic of full COIS, technical aspects aren't as important (except for the comparison between the local and toll networks for operational purposes)—yet it is important to notice how automatic and flexible this type of signalling method is, not to mention its speed and efficacy. All the software control involved with local and toll networks is called, fittingly, the "stored program control network" or SPN (Integrated Services Digital Network).

## CLASS/LCIS Features

Using a high speed data link between local offices creates a much more flexible and more efficient way for intra LATA central offices to communicate. Instead of using per-trunk signalling (using the same trunk used for voice transmission) to send routing and billing information, such data would be sent from a dedicated data link, which interacts with a local signal processing and transfer point. From that point, signalling information is distributed to appropriate central offices or tandem switches.

# It Means To Us

LCIS will work with the local switches using stored program control, keeping track of call data. The MA switches will use what is called "scratch pad" memory (also known as call store), in conjunction with LCIS's database, to accomplish all the features that CLASS provides. This memory will hold such data as "the history" and a "screening list". That information will make it possible for auto-redial, selective call forwarding, nuisance call rejection, and distinctive call waiting tones.

Test stage defaults for some features:

DTMF Pulse Description of Service

\*66 1155 Reconnect Last caller

\*63 1163 Selective Call Forward

\*50 1160 Nuisance Call Blocking

\*57 1157 Customer "Trace"

*Command codes may vary in different areas. These were found in a general description of CLASS.*

## Selective CF

Selective call forwarding is defined by the subscriber (the subscriber must have conventional call forwarding to request this service). Using call store, or more specifically, the screening list, one will be able to selectively forward a call to another directory number by executing a few simple commands on the friendly home-bound telephone (unlike migrating telephones most frequently found in hotel rooms). An access code (a list will appear at the end of the file) will be entered, and a special tone will be issued from the subscriber's CO. The customer will then dial in the number he wants forwarded to the particular number. After each number, a tone will sound indicating the acceptance of the number. Individual BOC's (Bell Operating Companies) will be able to define the amount of numbers which may be screened. Once

this is done, the customer hangs up and the ESS takes over. Now, whenever someone calls this particular customer, the customer's switch will compare the calling line's directory number with those stored in scratch pad memory. If the CLID matches, one of the numbers in MA memory associated with the called directory number, the number is forwarded. If not, the phone will ring at the original destination. This in particular could make it very difficult on system hackers, as you could probably imagine. A company can subscribe to this CLASS feature, and enter only the numbers of authorized users to be forwarded to a computer. Bureaus inside the various telephone companies and other sensitive operations can screen calls to particular numbers by using this service.

This is a security that's hard to beat. But of course there is a way (simple law of nature; nothing is fool-safe). There will always be the obvious way of finding numbers which are being forwarded to, like auto-dialing utility exchanges (and other the other). Unfortunately, CLASS will be providing other services which might make "scrambling" seem less attractive.

## Distinctive Ringing

Distinctive ringing is handled in the same fashion as selective call forwarding; the screening list in scratch pad memory. The customer may enter numbers which the ESS should give special precedence to, and whenever a call is placed to this particular customer's number, ESS checks to see whether the CLID matches a directory number listed in the switch's memory. If a match is made, the subscriber's CO gives the off-hook line a special call waiting tone, or the on-hook phone a distinctive ring (possibly using abnormally timed ringing voltage—some readers may picture a British Telecom ring as an example, although many foreign audible rings tend to be different).

## Call Rejection

Nuisance call rejection, a feature making it possible to block certain tones from ringing your phone (a feature we can all benefit from at one time or another...or all of the time), uses the information retrieved from LCIS's (CLID). Lets

## E-Card Trial

A trial for a new AT&T credit card is in progress. It's called the E-Card (Smart Card). The trial started in January 1987 and is scheduled to run for six months. One thousand E-Card participants were selected to try out the new card and 1000 AT&T public telephones were modified for E-Card capability. These telephones are located at airports in 30 cities.

The E-Card is a credit card with a small micro-chip (ROM) and gold fingers on the card edge. The E-Card can store up to 50 names and telephone numbers. It is similar to a credit card but has no magnetic strip on it (card number and listings are contained in the micro-chip). The customer inserts the card into the public telephone and his directory list will appear on the screen. The calling party depresses the digit(s) shown next to the person's name he wishes to dial. The call is automatically outpulsed and charged to the calling card number.

E-Card holders who require assistance on how to use the card or encounter a service difficulty resulting in a request for credit are instructed to call 800-922-0088. This number is on the modified telephones and is also on the screen.

## 959 Numbers

Last month, in the letters column, a coin phone test number was mentioned. This number was 9591230. The 959 exchange is a test number exchange used by AT&T. There are lots of AT&T employees and test numbers globe. Often, in a cross-bar switching system, you can't reach a 959 number without dialing 0+NP+X first (note: this is not an operator assisted call). Keep in mind that these numbers will vary from town to town. And of course, the best thing about 959 numbers is that they're free.

## Coin Test

0 HNPA (Home NPA) 959-1230  
0-959-1230

## 959-1230

Y=0 or X=0 through 9

959-1Y0x Milliwat (1004 beta tone)

959-1Y1x AFSS Test Board Position

959-1Y2x Milliwat

959-1Y3x Quiet Termination

959-1Y4x Remote Office Test Line

959-1Y5x ROLL (Type 105 test line)

959-1Y6x Always Busy

959-1Y7x Always Busy

959-1Y8x Always Busy

959-1Y9x White Plains, NY WATS center (X=0, 5, 6 and 7)

959-210x Wayne, PA WATS center (X=0, 5, 6 and 7)

959-215x Chicago, IL WATS center (X=0-9)

959-216x WATS confirmation recording (XX=00-29)

959-5xxx Test positions, strategic ones. I haven't had time to scan this out.

There are more numbers than this, but this is what I've found as of yet. If anyone scans this out send what you get into us here at 2600.

(Don Foley is our volunteer.)

# phoning home from europe

by The Lissman

The information in this article was gathered from experience in the countries mentioned.

One thing you have to keep in mind when dealing with the telephone systems in other countries is that they are inferior to the ones you are used to dealing with in the United States. This is mainly due to the fact that we invented the telephone system and that AT&T and the ABC's (BUREX, Southwestern Bell, etc.) are private companies whereas most of the telephone companies in Europe are run by the governments of those countries. All of the companies were public until September of 1984, when British Telecom International was privatized.

The first country I visited was England. When I was there the Hotel I was staying at told me they had a "Direct Line to the United States". I found this a bit odd, so I inquired more about it and found out about USA Direct, a new service offered by AT&T. The service allows people in other countries to call the U.S. via a TSPS type of operator position located in New York. The operators have the country code of the country you are calling from and that is all. Over 50 countries are handled by the new service. They include: United Kingdom (080 069 0011), France (19-0011), The Netherlands (06 022 9111), Germany (except Frankfurt) (0 130 0010), Australia (001 488 1011), Denmark, Spain, Japan, Korea, Hong Kong, Iran, Columbia, Panama, and a lot of other Central American countries. The list of countries is supposed to expand within the next year or so. Italy and other countries should be joining the service soon. If you'd like to find out about a specific country you plan to visit, call the AT&T International Long Distance toll free number at 800-872-4201. They will be able to give you a more complete list as the one I left here gradually becomes out of date.

## England

British Telecom International (BTI) has by far the most advanced equipment in all of Europe. Unfortunately, this is not saying very much. They are upgrading existing step by step and crossover exchanges to digital switches, namely System X. When I was there, though, I only ran into one exchange in London that would accept the tones generated by my portable touch-tone generator.

The operator services of BTI are also far below the standards we are used to in the U.S. When you dial a BTI international operator (155), they will usually keep you waiting for a few minutes. When you do reach an international operator, they do not know your telephone number and will believe you when you make up one. They can place collect calls and calls using AT&T International Calling Cards. The only problem with this method is that if you are staying at a hotel you won't be able to reach the USA Direct or the BTI international operator via the hotel's PBX and you will have to give them the calling card number and have them handle it. Both MCI and Sprint call the U.K., so it shouldn't be too hard for people to call you.

Another operator you will find useful is the local operator. They, like the international operator, do not have Operator Number Identification (ONI). When making local calls you can call the 100 operator and tell them you live 200 in their phone and they will believe you and place the call for you. This works also in making calls to other cities in England, besides London.

## Switzerland

The next country I'd like to discuss is Switzerland. The telephone company there is a branch of the postal service. Central offices are located in the post offices. The best method known to me to call the U.S. is via the international operator using an AT&T calling card. They require call back on calling card calls so you can't make any free calls from where you are staying. MCI is about the only long distance carrier (excluding AT&T) that calls Switzerland. The telephone system from what I can interpret is a modified step by step or crossover that accepts standard international DTMF tones (in some exchanges) via an interpreter. They also have cable boxes on the street that are locked and can be opened by a standard square wrench. This is rather dangerous since the police in Switzerland are not very nice and the concept of civil rights is not understood. When USA Direct becomes available there it will be easier to make calls to the U.S. from Switzerland.

(Continued on page 16)



ADDRESS/CITY/ST	TYPE	SIGNAME/PROVIDER/RESPONSE/COMP/DIR/STG	ADDRESS/CITY/ST	TYPE	SIGNAME/PROVIDER/RESPONSE/COMP/DIR/STG	ADDRESS/CITY/ST	TYPE	SIGNAME/PROVIDER/RESPONSE/COMP/DIR/STG
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120101			120101			120101		
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The listing of network providers included herein is not intended to constitute an endorsement by the Federal Communications Commission of the quality of service provided by any of the providers listed herein.

TELENET

ADDRESSES

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(Continued on page 12)

# Put Letters

# Headline Here

## New Toys

Dear 2600:

Here's some interesting information that 2600 readers might be interested in.

US West has introduced their new MPOW (Multi-Purpose Operator Workstation) which converts any IBM-compatible PC into a complete TSPS console with advanced capabilities. I'm sure many 2600 readers with PC's will find this concept intriguing. Perhaps there is a way to obtain and copy the board(s) and software.

Mitel's new telco product catalog describes several interesting products, including MF-tone generators and receivers, and a dialpad-digit recorder. The latter is capable of "blue-box detection" and detects and prints out all 2600 hertz and MF-tone activity in red, triggers external alarms, and prints out all other line activity as well. No doubt phreaks have been busted with the help of this device.

Radio Shack now has a budget version of this for under \$100. Their compact device prints out all dialed digits (touch tone and pulse) as well as the start and end times of all incoming and outgoing calls. Until now nothing coming close to this in capability was available for under \$1000. Law-enforcement types will undoubtedly be using this updated version of the pen-register in various "fishing expeditions." It's interesting to note that the use of such equipment by police does *not* require a warrant, which means they can (and do) use it to snoop on whomever they choose to without worrying about wiretapping regulations.

On a more upbeat note, I've discovered that the Mitel S200 PABX where I work is externally programmable by modem, and can be

programmed to forward calls, among other things. I suspect many businesses with WATS lines and newer electronic PABX's are vulnerable to this "roll your own" approach to WATS extending. PABX's are fascinating—they're amazingly complex, versatile... and vulnerable. With a programming manual and a little inside knowledge or hacking skill, one can manipulate a company's entire telephone system from afar. Definitely worth checking into! I'd be interested in finding out what other 2600 readers have discovered about this subject.

Bernie S.

*Thanks for the info. We must ask that the new Radio Shack toy is, to say the least, incredible. See the article in this issue for a review.*

*Is it really true that the police don't need a warrant to use that instrument? Where do they get it? They must need some kind of permission from someone to either climb a telephone pole, install the thing inside the central office, or plug it into the side of a house.*

## Explain Yourself

Dear 2600:

I am not a hacker or a phreak, and in fact I'm not really literate in these matters, but I occasionally peruse your magazine. I am aware that you intend to undertake a strategy to increase your circulation, perhaps including newsstand sales. If this plan is to succeed, you are going to have to appeal to others like myself, with little or no understanding of electronics. In this connection, I would like to make a suggestion concerning the readability of your publication.

Every field of expertise inevitably develops its own jargon or lexicon which, for the most part, is impenetrable to those uninitiated in

that particular field. This is true of theoretical physics and psycho-analysis, philosophy, and high finance, and it is true of computer hacking.

For example, in a recent issue you printed an article entitled *Getting the Most Out of Equal Access* in which you state, among other mysterious things, that one can make long distance calls by dialing 10nm, etc. The first question that comes to my mind is, how exactly does one dial "nm"? Are you referring to the letter "N" which is printed with the number 6 on the telephone? Well, possibly, but I think not (because the letters on the phone are printed in upper case, but your n's were printed in lower case, suggesting that these letters are symbolic of some operation or piece of equipment known only to the initiated few).

So, after having read the article, I am left with the burning and unanswered question: Just exactly how does one dial "nm"? Or, perhaps more to the point: Just exactly what does this thrice repeated lower case "n" symbolize? This, incidentally, is just one instance of a problem which I find recurring frequently in virtually every issue, and the fact is that people aren't going to purchase what they can't understand.

However, I believe there is a rather simple solution to this difficulty: I suggest that, in each issue, you include a glossary in which you give clear, "ordinary language" definitions of all the technical terms and symbols used in that issue. In this way you will not only broaden your readership, but you will also provide a valuable educational service to the public. I hope you will consider this suggestion, or some similar alternative, as I believe it is politically dangerous for the majority of the public to be, like me, computer-

illiterate in this day and age.

Furtherly,  
Izzy Hear

*You raise many good points. Let us first answer your question. Generally, whenever you see sm's, n's or x's, they indicate variables, or single digit numbers that are as yet undefined. If you look at the article in question, you should see a list of 3-digit numbers. These numbers are in fact the mysterious nm's. But if equal access isn't installed where you are, those numbers won't do a thing except confuse your local switching center.*

*We are encouraging our writers to explain their terms either throughout their articles or at the end in a type of glossary. But, obviously, we can't keep repeating the same explanations. Some of our readers already accuse us of being too simplistic and elementary! What we are trying to do is explain things as we go along, which is what we've been doing since issue 1. Our magazine is not a one time deal that you read and discard, but reference material that is stored away and looked at whenever the need arises. That's why we keep the back issues available, so we don't have to keep repeating the same information.*

*On another note, do you really think people aren't going to buy what they can't understand? Check out all of the folks who buy computers and don't know what to do with them when they plug them in! Answering machines, VCR's, telephone systems, even TV Guide—it's all becoming incomprehensible to the average people of the world. But that mere fact doesn't seem to be affecting sales. The emphasis seems to be on possession rather than comprehension. That's why the hackers are thriving in this world—they understand the tech-*

(Continued on page 17)

# FAX: A New Hobby

by Bernie S.

Occasionally when scanning phone numbers you'll come across what sounds like a computer modem carrier bit: What if often turns out to be a facsimile (FAX) machine. For those unaware of it, a FAX machine lets you send printed info (text, diagrams, or photos) over a phone line or radio link. Like computer modems, they use a carrier tone, but it is a different frequency and unlike "normal" data communications.

A FAX machine scans a printed document using an optical sensor that sweeps over the print, detecting light and dark sections of the paper. There are presently three common FAX standards in use: Group I, II, and III. Until fairly recently, most FAX transmissions were of the Group I variety. Group I machines (many of which are still in use) use a rotating drum that the document is clamped to while the sensor traverses the length of the drum slowly. The light and dark sections modulate the carrier tone frequency which is transmitted over the phone line to another FAX machine. At the other end, it works in reverse—the modulated tone is translated back into an image by a hi-voltage stylus which scans over a blank sheet of electrostatically-sensitive paper, "burning" the image onto the sheet. (This makes a crink sheet; real old machines would fill a room with stinky Group I transmissions, typically take 6 minutes for an 8 1/2 by 11 inch sheet.)

With the advent of cheap digital IC's, Group II and III standards emerged which transmit signals digitally (not unlike computer modems). The fastest group III machines can send a document in less than a minute at 9600 baud, the limit for unconditioned dial-up phone lines. A Group IV standard now exists which is much faster but requires Bell OS's or similar dedicated digital lines. The mechanical drum is now obsolete—a sheet is simply "dropped in" a newer FAX machine in which a tight row of phototransistors scans the whole document as it's pulled in between small motor-driven rollers. For output, ink-jet or similar printing technology prints out the received document.

For experimenters with little (or no) money, a

lot of companies are getting rid of their older Group I and II machines for cheap—I got an Exton Drip 1200 Group I FAX from a local newspaper for \$50, and they threw in several reams of the special paper. This model was very popular about six years ago, and sold for about \$1000. Look around! Most Group II and III machines can be switched into Group I mode for compatibility. Some newer machines double as copiers, though you can cheat and use a tape recorder to "play" a document back into a machine to get a copy in a pinch. Eventually, a FAX machine-classer-printer/copier will be invented and will be a standard office machine everywhere. Expensive PC add-on cards exist that convert a PC and printer into a fax (hello, share images on disk, but they're almost as expensive as a new FAX machine).

**"If you have a shortwave receiver with a BFO, you can pick up FAX images relayed from weather satellites, wire and press service photos, etc."**

Now we can all send schematics, drawings, and photos over the phone for cheap—just like the big boys do. I may be the first to coin a new term: PHAXing! As an added bonus, if you have a shortwave receiver with a BFO, you can pick up FAX images relayed from weather satellites, wire and press service photos, etc. Before everybody else sees them. Some minor modifications are needed to convert the speed since they use non-standard scan rates, but it's worth the effort.

I hope you're all turned on to this "new" hobby. Let's see some enthusiasm and support for FAX!

## CLASS

say customer A calls customer B. Customer B happens to despise customer A, and keys in a special code. ESS again takes over and looks at the CLID information, and stores the calling line directory number in a special screen list associated with customer B. The next time customer A tries calling customer B, the terminating office will override the call to a local (the originating CO) digitized recording telling customer A that the call he made cannot be completed due to customer B's request. ("I'm sorry, but the customer you have tried to reach wishes you were eaten by a rabid carnival on drugs").

### Old Back

To create such a feature as "dial back" (for called or calling party), the ESS scratch pad memory is used again. The same principles are used as are employed in the already established custom calling feature, auto-redial. CLID will be used in the following way.

Your ESS switch will keep track of who you called last, and who called you last, through the retrieval of calling line information provided by LCCIS in conjunction with your switch. (Your switch will know what number you called last by directly storing the digits you dialed previously. Local signaling will provide calling line information via LCCIS call information forwarding using the data link mentioned.) This way, with your access code you will have total re-dial service.

### Customer Trace

This type of memory handling and signalling method will also allow the feature that everyone was afraid would abolish "phreaking". Subscriber initiated tracing, using the last caller directory number stored at your CO, will be available as far as Bell Laboratories is concerned. There seem to be two types of "customer originated trace". One will forward the number to local authorities, at which it will be handled through the police. The other feature AT&T/Bell Labs is working on will be a display module that will sit by your phone, and will display calling directory numbers. All other CLASS features that use the calling line information are used at the discretion of the caller. The customer originated trace, however, using the individual or bulk calling line

(continued from page 7)

identification features ("trace") allow the customer to view the calling number. The world is not ending...yet. In any case, individual customers will be able to employ a special "privacy code", which when dialed, tells the far-end switch not to forward the calling number to a desk display. Whether there will be a way to override this or not is obvious, of course. The police, the military, and government agencies are all likely to have a higher priority level than your privacy. It seems that long distance carriers could benefit greatly from CLASS. Why Bell/AT&T should give any type of special services to DCC's (Sport MCI, etc.) not given to other non-telephone companies, especially after equal access is fully implemented, I don't know (but then again, it is equal access). It is also possible that there will be no desk display. There are those phone phreaks who feel that BOC's will never give the end party the privilege of retrieving the calling party's number directly, due to plain old Bell policy on the issue of privacy. We'll have to wait and see about that point; the desk display is, in fact, operational and is being used in test stages. Whether Bell Labs feels that this feature can and will be used in a full scale non-beta stage BOC situation is a different story. The economic feasibility is questionable.

### End Notes

CLASS, using local OCIS, will not function on inter-LATA calls. The local OCIS network is exactly that: local, and does not extend into the realm of "all network". This will eventually be corrected (allowing toll OCIS to interact with LCCIS as far as CLID information is concerned). How the various long distance networks will exchange information with the local BOC network is still a matter of speculation. It would seem like a monumental task to try to integrate the emerging long distance companies into the AT&T/BOC ISDN, be it because of equipment inconsistencies or lack of cooperation on the part of the DCC, etc.

CLASS is going to cause problems, as well as create a new environment for telephone users. Of course, those problems are only problems to people who will generally be reading this article, but the more you know about CLASS, the more comfortable you'll feel about the service. It can

(continued on next page)



# CLASS

(continued)

be used to one's advantage, even as a telecommunications hobbyist. Just as a corporation will be able to set up a complete history of who is calling their system, and eventually keep people off the system using the open list in memory, the same features can be applied to bulletin board systems and the like. Imagine being able to keep all the local hours of your board, or being able to screen all but your private local users (making your system completely inaccessible through the FSTN network from any telephone but that of one of your users). In such applications, the system could be useful.

## phoning home

(continued from page 9)

Italy

Italy, the last country I visited on my tour, turned out to be the best country all around. When I went to Italy I did not think that it was very easy to call the United States. I was wrong. I tried to find out if USA Direct was available in Italy and found out it wasn't (but will be by the end of 1987). So I experimented with the use of international AT&T calling cards. This is very difficult since it is not possible (the long distance operator of Italian telephone) required call back for collect and calling card calls. Unfortunately the only payphones which have the phone numbers written on them are the ones in restaurants and bars. I asked one of my Italian friends about calling for free and she told me a trick that she had used while in Sicily to call Rome. She showed it to me and it worked. It could only be done on payphones (any payphone). 1) Get a piece of conducting metal (wire, etc.) 2) Dial 111 on a payphone (you will get a free order). 3) Fasten one end of the wire to the metal guarding the wire from the handset to the telephone itself. 4) Put the other end of the wire in the center hole of the microphone side of the handset and tap it extremely lightly once, maybe twice. This should turn the receiver into a dialtone. Once this happens you can dial anywhere in Italy or anywhere in the world without any toll restrictions. (Note: this takes a while to get the hang of.) If you cannot work this

out, you can deposit 200 Lire (10 cents) into a payphone and it will let you dial the U.S. If cars you get very soon after you are connected, but you can at least give the number of where you are staying. MCI is the only long distance company, besides AT&T, that calls Italy. If you do go to Italy you will see how bad the telephone system is. This could have something to do with the fact that they insulate their wire with paper instead of plastic.

Remember when calling the U.S. to avoid calling people using fraudulent AT&T International Calling Cards. If you have to use a Calling Card, call an extender, and tell your friends through the extender and then get your friends to call you. Also, if USA Direct is available in the country you are in, use it to call an extender in the States collect or use a calling card number on USA Direct. The reason I say this is because it is widely known that when it comes to hacking the worst long distance company known for this, by far, is AT&T. All you have to do is be careful and enjoy your vacation.



This blue box has chips to generate the tones that it still takes up a lot of room in a 12x2.5x5 inch case. Be'll head over the presentometers inside just in case it was sold to someone who knew what it was.  
Photo by John Drake

# Letters Headline

(continued from page 13)

nology and they use their brains to gain control of it while everyone else is still reading the documentation. We speak to the hackers, but we'll never miss an opportunity to enlighten a non-hacker who's interested in learning. That's why we always try and answer questions.

## Needs Blue Box Program

Dear 2600:

I am currently "attempting" to write a book concerning computer phone phreaking and hacking. I thought a section on "blue boxes" would be an interesting history lesson for readers since the technique is fast becoming obsolete and is unknown to most people. I have BASIC blue box plans for the C-64, Atari, and the II computers. I am in desperate need of a blue box program written entirely in BASIC for the following computers: IBM, Apple, Tandy, Radio Shack.

Do you have any available printouts of such programs for these computers? If one of your readers has such listings, they can reach me at (214) 693-5132 from 8 am-6 pm CST.

Edward Dean Jones

## Access Still Unequal

Dear 2600:

I'm grateful for the Hobbit's article, *Getting the Most Out of Equal Access*. Recently I switched from Ma Bell to MCI and became aware of the equal access possibilities. Unfortunately my area doesn't permit equal access. So the question now is how do I lobby for one? Have you any suggestions?

In light of the fact that the procedure for placing a long distance call is now above the understanding level (sic, "level" is redundant) of a good proportion of the public, and the various companies are doing very little to educate them, what organizations and magazines are available to help

consumers get through the maze? I'd like to see a list of them in 2600.

I'm aware of a single article devoted to alternate long distance carriers. It appeared in *Consumer Reports* several months ago.

On a different subject, 2600's print makes r's and n's combine into one fused incomprehensible letter.

And finally, authors and editors should care enough to define terms for us neophytes. What's an X-bar switch? A CD? An ESS?

I hope to see more articles helping casual users through the maze of phone company shenanigans.

IHR

Equal access should be available in all areas of the USA by the early nineties at the very latest. If you carry on a bit and call your business office with complaints fairly frequently, they ought speed it up somewhat. But the very least they must do is provide you with free access to the long distance carrier of your choice. Usually this is done through the 950 exchange.

We've noticed the problem with the r's and n's on one of our speakers. Until we figure out how to fix that simply substitute an "r" and an "n" for every fused incomprehensible letter you come across.

## Reaching Out

Dear 2600:

You've helped me a bunch by publishing all those net addresses. One or two people who I couldn't reach before became reachable due to you. So, in return, here are some other net addresses which work:

- 1 Jet Propulsion Lab, Pasadena, CA 911-1631
- 2 California Institute of Technology, Pasadena, CA 800-441-4141
- 3 Texas Inst. of Tech, TX 817-257-1111

**1 MIT, Cambridge, MA**  
**2 Indiana, Ellettsville**  
**3 Ohio State University, Columbus, OH**  
**4 Case-Western Reserve**  
**5 University of California at Berkeley**  
**6 PERAS, REMELBY, CO**  
**7 Lawrence Livermore National Laboratory**  
**8 UC Davis, Davis, CA 95616**

My question for the day—what is the name of the net which uses ... dividers, and how does it work? That is, there are addresses like:  
 hunda:11atfact:blip: anywhere:iboo

I would be connected to node "hunda", which then forwards it to flatfoot, etc, until it gets to user bozo. What's it all about? Who pays for what?  
**EH**

Watch for an intelligent answer to your question as soon as we track down our network experts. For some reason, they're extremely hard to reach.  
**More on VAX**

Dear 2600:  
 Enjoyed your article on the VAX. I'm always looking for information on how to prevent harm.  
 One comment: you don't need CMKRNL privilege to gain full privileges. See below.  
**The Carolina Beachcomber**

This little thing is a wrapper. The owner needs only SET privilege to grant himself full privileges.  
 Remember that if someone wants to modify SET privilege instead of EXECL.  
 Save it as a filename .M  
 Compile it by typing:  
 @ Makefile  
 Use it by typing:  
 @ Link filename, 25500:25500:25500:25500  
 Execute it by Altering filename

FILE	SET PRICE
4000	4000
4001	4001
4002	4002
4003	4003
4004	4004
4005	4005
4006	4006
4007	4007
4008	4008
4009	4009
4010	4010
4011	4011
4012	4012
4013	4013
4014	4014
4015	4015
4016	4016
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## TELENET (continued from page 11)

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1100	1100	1100

(Continued on page 20)

# 2600 marketplace

**WANTED:** Looking for a good used 5 or 10 megabyte hard drive for the Apple II series of computers. If you are selling one or know of anyone that is then send replies to: Brian F., 1003W Main, Apt. 3, Ottawa, IL 61350. I NEED INFO on a power supply made for Western Electric by ACME Electric Corp. in 1971. It is designated: Rectifier Semiconductor Type—187233A-2 U. Input is 208/240v, output 48v/30a using 5CR5 as control elements. Any info would be appreciated. A schematic would be wonderful. I'll be glad to reimburse copying costs. J. Klein, 12330 Taklima Rd., Cave Junction, OR 97523

**FOR SALE:** Texas Instrument "Atlas-denurter" (Silent 700 series) intelligent data terminal. Many uses. Reasonable. Contact Ted K., PO Box 538, Auburn, NY 13021-0538.

**SCHEMATICS - BUY, SELL, TRADE:** We are interested in enlarging our collection of circuit diagrams for interesting electronic devices. Send list of what you want/have and a \$ASE to: J.R. "Bob" Dobbie, PO Box 444, Shawnee Mission, KS 66202.

**TAIWANI:** All Taiwan computers and accessories available for direct shipment for cost plus shipping plus 3% (quantities of \$50 or more). Giles, PO Box 12586, El Paso, TX 79913.

**PRIVATE INVESTIGATOR:** Ben Harrell would like to hear from either P.I.'s and/or ANY other "spooks" (i.e. N.S.A., CIA, FBI, etc.) for purposes of exchanges in ideas, techniques, sources, and equipment. (619) 238-6991, 425 "F" St., San Diego, CA 92101

**TAP BACK ISSUES:** Reprints of complete collection. Quality copies. Delivery included. Send cash, cheque, or MO (Payable to PPS), \$60. John L., P.O. Box 722, Station A, Downsview, Ontario M3M 3A9.

**FRIDAY, JUNE 5, 1987 AT 6 PM:** That's when the first 2600 meeting will occur in New York City. If you want to drop off articles, ask us questions, meet people, or just see what we look like, come on by. At the Calcomp Center in the Atrium—153 East 53rd Street.

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**TD LIKE TO TRADE:** PC software with ANYONE having an IBM PC or compatible. At present my PC library approximates 110 products including the latest games, diagnostic programs, business software, utilities, and various word processing and other application software. Readers can contact me by writing: Software, PO Box 73, Uniondale, NY 11553.

**WANTED:** A decent modem program for use on a Zenith 2-100 running MS-DOS. Contact Manny @ 2600, 15161751-2800 or PO Box 752, Middle Island, NY 11953.

**DOCUMENTATION** on electronic & digital PBX's and switching systems. Willing to trade/purchase. Also looking for Bell System Practices and other such paraphernalia. Write to Bill, c/o 2600, PO Box 7523, Middle Island, NY 11953.

**GO SOMETHING TO SELL:** Looking for something to buy? Or trade? This is the place! The 2600 Marketplace is free to subscribers! Just send us whatever you want to say (without making it too long) and we'll print it! Only people please, no businesses!

Deadline for June issue: 6/5/87.

# A PEN REGISTER FOR PHREAKS?

Deephone CPA-1000  
 Dialed Number Recorder  
 Available at Radio Shack  
 \$99

Review by Emmanuel Gultstein

The fairly new Radio Shack CPA-1000 "pen register" is a most remarkable piece of equipment and a must for those who want to know what's really happening on their phone lines.

In the past, phone phreaks have always dreamed having a pen register put on their line—a device that prints out every number dialed, including authorization codes and touchtone passwords. By having one already on your line in the comfort of your own home, you at least have the convenience of seeing what others might be seeing.

But that's not the only reason to have one of these devices. Have you ever wondered how a particular phone number got onto your bill? The CPA-1000 will tell you, as soon as the number is dialed. It will also tell you how long the phone was off the hook for. (Note: that is not the same as how long the conversation went on for. The machine cannot tell if the line was busy or never answered—it listens all calls the same.) This will work for any extension hooked up on that line, including those not inside your house, such as when the telephone lineman hooks into your line on the pole or when the switchman at the central office is playing around. This device is also quite convenient when a repairman comes around and dials some of those magic numbers. Now it will all be neatly recorded.

The CPA-1000 also keeps track of incoming calls. It will tell you how many times the phone rang and how long the phone was off the hook, if it was picked up at all. This in itself is a great supplement to an answering machine that doesn't have a time function. Every time the phone rings,

the date and time will be printed out.

Of course, consumers can now do the same nasty things that only tech or spies could do before. Simply plugging the CPA-1000 into a modular outlet anywhere (the unit can run on four "AA" batteries) will give you all activity for that line as it happens. It will even record long distance authorization codes.

Recently, we reported a problem on one of our lines to the telephone company. Within minutes, the CPA-1000 started printing out strange information. According to its report, the phone rang zero times and someone was on the phone for thirty seconds. This happened about four or five times. We were actually able to "see" the phone company testing the line.

The CPA-1000 looks like a small adding machine and uses the same type of paper. It doesn't make much noise when it prints, and it can be easily muffled. At the end of each day, the total number of incoming calls, non-answered incoming calls, outgoing calls, and outgoing calls exceeding ten digits is printed out. An additional feature is the accounting code. All a person has to do is dial or touch tone four digits before they hang up. These four digits will print out below the other information—a great way to claim calls. The unit can support call waiting and works perfectly regardless of whether the caller is using touch tone or pulse or even both.

It's rather amusing that Radio Shack would come out with a product like this when it's been so busy trying to get people to stop listening to cellular phone calls. While this isn't an actual bug, one can tell an awful lot about a person or a company by the numbers they dial. It's nice to know that at least the consumers can see what's really going on inside their phone lines—and maybe inside yours as well. The author has never been doing this for years.

Instead of Reading This Ad  
 Read the One on Page 5.  
 You Won't Regret It.

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